

The Rocky Mountain Center

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Gateway to OSH

Occupational Safety and Health

Flipping our Classes: The New OSH Educational Norm

*D*istance-based education is most often provided to experienced, nontraditional students with insufficient time to travel to a classroom. Yet, it has been shown that students in quality distance-education programs generally learn as well as traditional students. A nugget is that these teaching experiences provide the teachers with opportunities to improve traditional classroom teaching. Thus, to combine the best of both worlds, RMCOEH courses are being transitioned to a hybrid model, which have an online, distance-based elements combined with live class time. This model, called “flipping the classroom,” is rapidly becoming the new graduate education norm. It is also more reliant on technology.

The integration of technology and the classroom is part of the evolution in education for the past 25+ years. The transition from chalk boards, acetates, and overhead projectors to computerized interactive dry erase boards and Powerpoint® lectures, have nudged education forward by making the class time modestly more efficient, illustrative, and professional. However, educational materials have still been delivered in the same way, through unidirectional, educator-to-student lectures.

A flipped classroom experience is much different. In a flipped course, class time is used for discussion, problem solving, inquiry, application, and assessment. The actual didactic lecture elements were already accessed by each student before class time through prerecorded videos, lectures notes, and blogs. By coming to class with a working level of knowledge, class time is then spent on teaching applications, synthesis and problem solving rather than merely facts and memorization. A flipped classroom also maximizes the efficiency of the teacher's time.

Yet, recording lectures before flipping a classroom is not an overall savings in teacher's time. It is extraordinarily time-intensive. RMCOEH faculty have been working on recording lectures for the past 3 years, and revisions are always needed. However that time investment pays off beyond the ability to advance class-time learning. Students enjoy the flexibility to watch lectures more than once or to watch from a remote location. This also gives students an opportunity to consider, reflect, and integrate the ideas and concepts they are learning into their own experiences.

Flipped classes have also been utilized in worker training in a variety of industries. One drawback is that they require learners to study material for the first time before they actually are asked to internalize and apply it. Motivation is essential to adequately complete the pre-work.

RMCOEH's Occupational Epidemiology course, is one of many that are well-suited to “flipping,” because the concepts involve extensive problem solving, are compounding and situationally dependent. Dr. Matthew Thiese notes “Student feedback has been overwhelmingly positive, and student performance has improved commensurately.” The course has evolved from a traditional to a flipped model that integrates a problem-based curriculum and utilizes active learning and didactic elements, including online lectures, paired with formal and informal in-person or online conversations. The flipped Occupational Epidemiology course successfully facilitates interactions to help students identify and address problems related to epidemiological concepts such as study design, participant selection and interpretation. Ultimately, students develop the critical skills to critique a new study and determine if it meaningfully changes their OSH field.

The flipped class methods also allow for differentiated instruction. Different people learn with different methods. A simplified view is that some of us are stereotypically classified as visual learners and some auditory. Regardless, as different people learn using different methods, educational instruction must differ to best facilitate learning by diverse students. Thus, some students may primarily view recorded lectures by RMCOEH faculty while others prepare by mainly reading text material. RMCOEH's classes increasingly include these varied methods.

Other RMCOEH courses are moving to a fully flipped classroom, with the goal of providing many of the required courses in both a flipped, in-person hybrid model and a fully distance-based model. Dr. Hegmann notes that “These superior teaching methods dovetail nicely with the RMCOEH's mission and goals, which involve advancing the best occupational health and safety knowledge to the businesses and workers.”

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RMCOEH ADVISORY BOARD MEMBERS



Dale M. Cox was born, raised, and educated in Salt Lake County, is married to Jann and they have two sons Dallas and Trace.

With a 40 year history as a labor leader, Dale Cox began his career working in the field as a union welder mechanic, before joining the Operating Engineer's staff as a Business Agent, Assistant District Rep, District Rep, and Legislative Coordinator for the State of Utah.

Dale has committed himself and worked passionately for the rights of working men and women. In 2012 Dale Cox began his presidency with the UTAH AFL-CIO



with already thousands of hours experience with the Utah State Legislature reaching across the isles to ensure that the rights of Utah Working Families be heard.

Dale also provides service on the following boards:

- ◆ Board of Trustees for the Utah Colleges of Applied Technology
- ◆ Advisory Board Member for Salt Lake Community College, Vice Chair of Utah Votes
- ◆ Department of Workforce Services Employment Advisory Council
- ◆ Executive Board of the Road Home
- ◆ Rocky Mountain Center for Occupational and Environmental Health Advisory Board, serving his third year of services on the RMCOEH Advisory Board.
- ◆ Utah State Workforce Services Investment Board Odyssey House
- ◆ Salt Lake County -Community Resources & Development

Dr. Royce Moser Honored by Harvard School of Public Health



Royce Moser, Jr., M.D., MPH, Immediate Past Director of the RMCOEH, was honored by Dean Julio Frenk at a reception at the Harvard School of Public Health in 2013. Dean Frenk noted that Dr. Moser has been involved in HSPH alumni activities for many years and has served 2 years each as President-Elect, President, and Immediate Past President of the Alumni Association. During Dr. Moser's tenure, the Alumni Council accomplished a complete revision of the Association's Bylaws; implemented a new email system for alumni; established action committees to enhance interaction among, and support of, alumni, students, and faculty; obtained AMA Category I credit for the annual scientific meeting of the Association; developed mentoring programs for students; and accomplished review of the Master of Public Health curriculum. Dean Frenk presented Dr. Moser with a plaque with a gavel in honor of his presidency.



SOMETHING TO CONSIDER

Please consider supporting the **Rocky Mountain Center for Occupational & Environmental Health** by making a scholarship donation today! You can give to our general scholarship fund, or to one of the three scholarship funds. Those are: *The Jeff Lee Memorial Fund*, the *Dr. Richard E. Johns Endowed Scholarship*, and the *Royce Moser Jr. and Lois H. Moser Endowed Scholarship*. For questions about giving to the Rocky Mountain Center for Occupational & Environmental Health or to mail a gift, contact:

Development Director, Taylor Scalley, Health Sciences Development, University of Utah, 540 Arapahoe Dr., Suite 120, Salt Lake City, UT 84108, 801-585-6874.

RMCOEH now has over 540 graduates and we would love to know where you are. Please send a photo of yourself either alone or in front of the sign of your employment and a brief description of your job to:

Toni.Chambers@hsc.utah.edu

We plan to highlight alumni in every newsletter.

Upcoming Continuing Education Classes and Events

May Courses

- Lead Safety for Renovation, Repair, and Painting (RRP) Training Course
- OSHA 510/500 Trainer Course in Occupational Safety and Health for the Construction Industry
- OSHA 2045 Machinery & Machine Guarding Standards
- Operations Level Emergency Response

June Courses

- DOT Hazardous Material Transportation Training
- OSHA 511/501 Trainer Course in Occupational Safety and Health Standards for General Industries
- OSHA 3115 Fall Arrest Systems
- 40-Hour HAZWOPER Training
- Asbestos Inspector Training

July Courses

- OSHA 7505 Intro to Accident (Incident) Investigation
- Operations Level Emergency Response
- 24-Hour Hazardous Materials Technician
- OSHA 2015 Hazardous Materials

August Courses

- Rocky Mountain Comprehensive Review of IH
- OSHA 7405 Fall Hazard Awareness for the Construction Industry

- OSHA 7410 Managing Excavation Hazards
- OSHA 503/511/501 General Industry

September Courses

- CAOHC Approved Occupational Hearing Conservation & Refresher
- OSHA 3095 Electrical Standards
- 7100 Introduction to Machine Guarding
- 7405 Fall Hazard Awareness
- 7410 Managing Excavation Hazards
- Chemical Compatibility and Storage

October Courses

- 31st Annual Utah Conference of Safety and Industrial Hygiene
- Lead Safety for Renovation, Repair & Painting
- Asbestos Contractor/Supervisor & Inspector/Management Planner Refresher
- OSHA 3015 Excavation Trenching & Soil Mechanics (Helena, MT)

Correspondence Courses (Enroll at any time)

For additional information on CE classes, including distant learning courses, please visit the continuing education section of the RMCOEH website: <http://medicine.utah.edu/rmcoeh/>

RMCOEH News Corner

Jessica Hanford Scholarship Awarded

Jason Cross, IH Program, was awarded the third Hanford Scholarship. Jessica Hanford, MD, MPH, (OM, 2009) has requirements of a poem on safety & health with the winner drawn at random. Following is the poem by Jason Cross:

Exposure Assessment

Two hands traveling slow
Black numbers on a white face—
Record time go by

Wash and rinse repeat—
Enter data line by line
On a glaring screen

An ocean of masks
They are not for Halloween –
Blue N-95's

The sea is moving
The clock no longer ticking.
One more day is through

Air rustles papers—
Organized and recorded
They are filed away



Board Certifications: Jer Webster, class of 2010, recently passed the American Board of Industrial Hygiene examination and is now a Certified Industrial Hygienist, (CIH).



Engineers Work with Nurses to Reduce Falls for Elderly

Falls are a leading cause of disability and loss of independence in the elderly. The U.S. elderly population will increase by approximately 5% between 2011 and 2030 and one third of them fall each year. The causes of these falls are generally due to (1) reduced balance and stability, (2) reduced muscle strength, (3) illness/disease, and/or (4) medication. Up to 18% of patients fall at least once during hospitalization and most falls are among those over 65 years old.

Since the bedside in hospitals is a controlled environment where falls can more easily be addressed, this presents a rich opportunity to reduce falls, associated medical costs and personal disability. Dr. Andrew Merryweather RMCOEH/ Mechanical Engineering faculty and Dr. Jan Morse, Professor of Nursing are collaborating in a major grant funded by the Agency for Healthcare Research and Quality to determine the effect of bed height and design on slip and fall potential for fall-prone elderly. This is a unique project that combines Dr. Morse's expertise in patient fall prevention with Dr. Merryweather's expertise in biomechanics, instrumentation, and motion analysis.

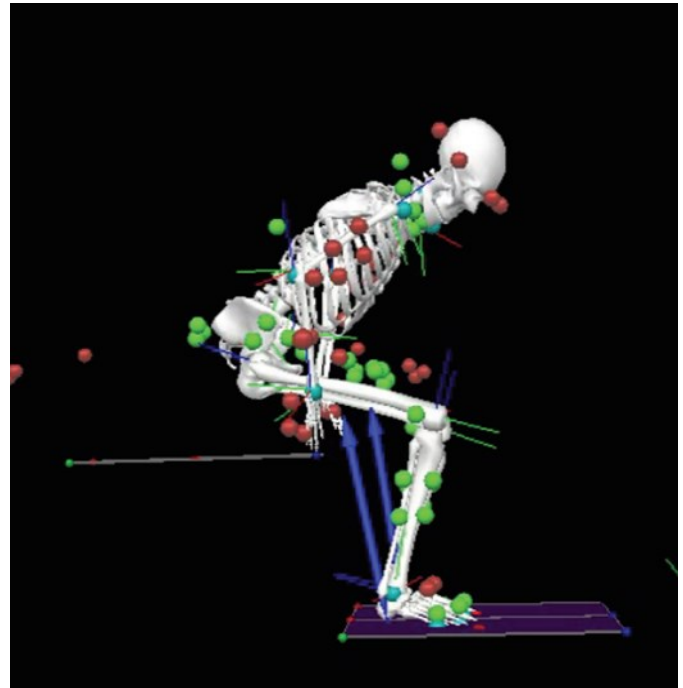
To date, 88 participants have been tested in a simulated hospital room to determine how gait impairment, anthropometry, hand and leg strength, and diseases affect fall potential for beds of different heights (low, medium, high) and different side rail designs. Participants are asked to stand, walk, sit on a hospital bed, lay down, roll over in bed, stand back up and walk back to the chair. Data are gathered from floor mounted force plates, instrumented bed, 18-camera motion tracking system, and two video cameras.

Data analyses are still underway but initial results indicate that for bed entry, the high bed has the greatest slip potential. For bed exit, the low bed has the greatest slip potential using this same measure. The time to first step after bed exit, which may be a measure of stability, is the longest for the low bed. Participants with lower knee moment capability used movement patterns which increased the slip potential at the foot and increased leg strength moment requirements, both potential indicators of increased slip or fall potential.

The results thus far suggest that the bed height should be adjusted for different patients to reduce slip/fall potential. Low beds required greater effort to rise and re-

duced slip potential on entry. High beds made it difficult to sit securely on entry, but reduced slip potential and required effort on exit. The researchers look forward to completing this work and beginning the next phase to prevent falls in this vulnerable population. These results also have potential to reduce health care provider falls that occur in catching falling patients.

3D Model with body landmark locations and foot force data when arising from a



bed.

Instrumented participant



Board Certified



Occupational Medicine: We are pleased to announce a 100% success rate for our Occupational Medicine resident graduates who have taken the American Board of Preventive Medicine Board (ABPM) certification exam over the past four years. We are honored to extend our congratulations to the following graduates.

2014: Kevin Chamberlain, DO, MOH, Alice Dowling, MD, MPH
2013: Alex Morgan, MD, MOH, Margaret Griffith, MD, MPH, Donald Mehr, MD, MOH, Rahila Andrews, MD, MOH, Melissa Cheng, MD, MOH, MHS

2012: Kelli Graziano, MD, MOH, Eryn Stansfield, MD, MOH
2011: Spencer Checketts, MD, MPH, Christopher Dea, MD, MPH

This brings the number of ABPM Occupational Medicine Diplomates who graduated from the RMCOEH since 1992 to a total of 64!

ABPM Residents in **Aerospace Medicine** are also soaring in Board Certifications:
Geoffrey Ewing, DO, MOH, Occupational Medicine and Aerospace Medicine 2012
Laura Brodhag, MD, MOH, Aerospace Medicine, 2013
Patricia (Pankey) MacSparran, MD, MOH, Occupational Medicine 2013, Aerospace Medicine 2014
Sanjay Gogate, DO, MOH, Aerospace Medicine 2014

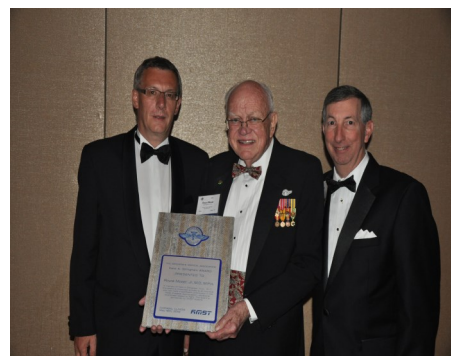


(l to r) Donald Mehr, Rahila Andrews, Alex Morgan, Kevin Chamberlain, Sanjay Gogate, Sheler Sadati, Melissa Cheng, Ali Dowling, Margaret Griffith

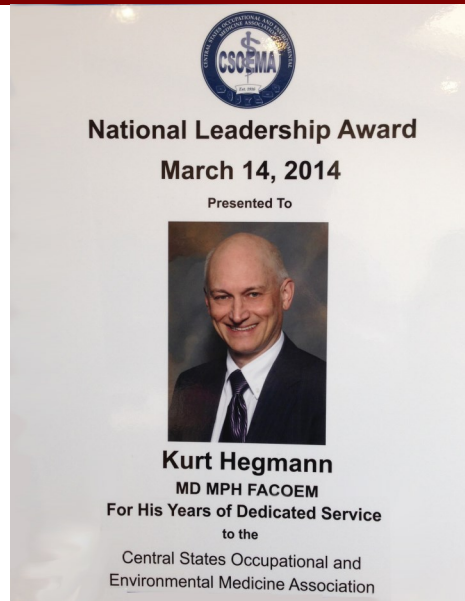
RMCOEH News



At the 2013 Annual Scientific Meeting of the Aerospace Medical Association, Royce Moser, Jr., M.D., MPH received the Kent K. Gillingham Award for his work in spatial disorientation. Spatial disorientation (SD), or “pilot’s vertigo”, occurs when misleading inputs from the eyes, ears, or body sensors cause the pilot to think the aircraft is flying safely when it is, in fact, on a path to impact the ground or water. In his first epidemiological study after completing his aerospace medicine residency, Dr. Moser found that SD was a contributing factor in 9% of flight accidents and in 26% of fatal mishaps in 1969 in a major US Air Force command. In 2008, a working group for the Secretary of Defense found that the current SD rates approximated those found by Dr. Moser. This situation existed in spite of numerous training and simulator efforts to protect pilots from SD. The Secretary then ordered Automatic Ground Collision Avoidance Systems installed in high performance aircraft. The Secretary commended Dr. Moser for his contributions to saving “hundreds of lives and billions of dollars in equipment.”



Dr. Kurt Hegmann received the National Leadership Award from the Central States Occupational and Environmental Medicine Association for his years of dedicated service to the Association. He was presented March 14, 2014 with the honor.



Raymond J. Godfrey
Royce Moser, Jr., and Lois H. Moser Endowed Scholarship in Occupational Health



Seung Lee, MD
Royce Moser, Jr., and Lois H. Moser Endowed Scholarship in Occupational Health & Dr. Richard E. Johns Endowed Scholarship



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RMCOEH Alumni ~ Robert (Bob) Marcinko

To begin, I graduated in the spring of 1981. Either I was or Mike Taylor was, the first to graduate from the RMCOEH Industrial Hygiene program. Dr. Jeff Lee was in charge of the program at that time and was the chairman of my thesis committee. I was fortunate to have known and worked with Dr. Lee. From the RMCOEH, I ventured to the Department of Energy Laboratory in SE Idaho to create an Industrial Hygiene program at a facility that reprocessed spent nuclear reactor fuels. For the next 31 years I worked in a number of positions from a field Industrial Hygienist to various management positions within the Environmental, Health, and Safety Program across the DOE site. The DOE site had seven primary research facilities in various locations across the 900 square miles of SE Idaho. Some of the research and operational activities, to name a few, involved developing new reactor fuels, testing the fuels in a unique nuclear test reactor, working with special weapons resistant metals and armor for military vehicles, developing plutonium thermoelectric batteries for NASA deep space missions (including the Mars rover), and various nuclear medicine activities. In addition, ongoing environmental remediation of various waste sites and decommissioned nuclear facilities

routinely took place. I could not have picked a more challenging, diverse, and exciting place to have spent my professional career. I retired from the DOE site in 2012 and still maintain my CSP and CIH with an occasional consulting activity as long as it doesn't get in the way of my recreational endeavors.

I do thank the RMCOEH for helping me advance in the Industrial Hygiene profession and I applaud their long standing excellent work in the ES&H professions.

